IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

IN RE: MARUTIAN, Sergey Vasilievich	)
	) APPEAL NO. _____
SERIAL NO: 10/500,350	)
	)
FOR: METHOD OF APPLYING THE COATINGS FROM ALUMINUM ALLOY ON CAST IRON AND STEEL PRODUCTS	)
	) REPLY BRIEF ON APPEAL
FILED: February 9, 2005	)
	)
GROUP ART UNIT: 1715	)
	)
DOCKET NO. P06835US00	)

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Kirk M. Hartung

I. ARGUMENTS

Claim 7 is the only claim pending in this application. For the reasons set forth below, and for the reasons set forth in Applicant's primary Appeal Brief, the Examiner's obviousness rejection of claim 7 must be reversed.

The Examiner's Obviousness Rejection is Defective

The rejection of claim 7 under 35 U.S.C. § 103 is based upon the allegedly obvious combination of Gierek in view of Rallis, and further in view of the Japanese '213 patent, and then the further optimization of time and temperature specifications for the aluminum alloy bath. Thus, the Examiner's rejection requires a person skilled in the art to take numerous steps in order to achieve Applicants' invention:

1. Modify Gierek in view of Rallis; then,
2. Further modify Gierek in view of Japanese '213; then
3. Optimize the aluminum alloy bath temperature; and then
4. Optimize the aluminum alloy bath time.

To follow these four steps, and then achieve Applicants' invention can only be accomplished by hindsight, since these references themselves do not suggest Applicants' invention.

First, Gierek provides no specific alloy composition. Rather, Gierek describes a generic aluminum alloy, and cites 25 possible aluminum additives that could be used for the alloy. See Gierek, col. 2, lines 50-52. Similarly, Rallis does not provide a specific aluminum

alloy, but also generically describes an aluminum alloy that can be comprised of 23 different aluminum additives. See Rallis, col. 2, line 64 – col. 3, line 4. Therefore, the Examiner cites the Japanese '213 patent as teaching Applicants' aluminum alloy. However, the Japanese '213 patent describes an alloy used for casting, rather than coating a steel product, as in Applicants' invention. Casting and coating are not equivalent processes and do not result in equivalent products. The Examiner provides no explanation as to why a person skilled in the art of aluminum coating would look to the field of aluminum casting for a specific alloy to use for coating.

Furthermore, the Gierek patent discloses a 400° bath temperature range, from 550° – 950° C. Similarly, Rallis discloses a 90° temperature range, from 538° – 727° C. In comparison, claim 7 requires a 20° range, from 660° – 680° C. The Examiner's assertion that either the Gierek or Rallis temperature ranges can be optimized to satisfy the range of claim 7 is an over simplification without any supporting evidence. Such a conclusory assertion cannot be the basis for an obviousness rejection.

Similarly, the Examiner's implication that the bath time can also be optimized from Gierek or Rallis is an unsupported conclusion. The Gierek time is 15 seconds – 30 minutes, while the Rallis time is 30 – 120 minutes. Thus, both Gierek and Rallis have a relative broad range of time for the aluminum alloy bath. In comparison, claim 7 has only a 10 second range for the aluminum bath, from 70 – 80 seconds. The Examiner has presented no evidence that Applicants' narrow, 10 second range can be discovered or reverse engineered from the broad ranges of Gierek or Rallis through simple, or quick and easy testing and

experimentation. Therefore, the alleged optimization of the bath time is not a mere obvious variation or derivation from Gierek or Rallis.

As noted in Applicants' primary Brief, the Japanese '213 patent has no disclosure of any time or temperature ranges for the aluminum alloy casting melt. Thus, the Japanese '213 patent does not overcome the deficiencies of Gierek and Rallis with respect to the bath time and temperature. In short, the Examiner's combination of Gierek, Rallis, and the Japanese '213 patents picks selected details from these references, without considering the reference as a whole, and then combines the selected details without any rational underpinning, and then speculates that the person of ordinary skill can find the optimum time and temperature from a wide range of times and temperatures, so as to allegedly achieve the subject matter and limitations of claim 7. Such selectively of the prior art details, the subsequent combination thereof, and then optimizing time and temperature, can only be achieved through the improper use of hindsight based upon Applicants' specification and claim 7.

On page 18 of the Brief, the Examiner quotes old CCPA case law:

> "Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 554, 556 (CCPA 1955).

Here, Rallis does not disclose the general conditions of claim 7, since Rallis is directed towards an interdiffused layer of two metals, whereas claim 7 relates to coating of a metal product with an aluminum alloy layer. Similarly, Japanese '213 does not disclose the general conditions of claim 7, since Japanese '213 relates to a casting process, whereas claim 7 relates to a coating process. Also, the Examiner has not shown that discovery of

Applicant's narrow time and temperature parameters only require routine experimentation. Therefore, the precedent cited by the Examiner does not support the Examiner's position.

As evidence in this case, Applicant submitted the Rule 132 Declaration of Dr. Gerald S. Frankel, a Professor of Materials and Science Engineering at The Ohio State University. Professor Frankel, a corrosion expert, as reviewed the Rallis and Japanese '213 patents cited by the Examiner in the rejection of claim 7. As Dr. Frankel explains in his Declaration, paragraph 3, Applicants' invention relates to an aluminum alloy coating on iron and steel products for ductility. Dr. Frankel further explains in his Declaration, paragraph 4, that Rallis is directed towards aluminizing steel with an intermetallic or interdiffused layer for high strength. Dr. Frankel further explains in paragraph 6 of his Declaration that in metallurgy, ductility and strength are inversely related. Dr. Frankel also notes that the five minutes required for metal interdiffusion in Rallis is approximately five times longer than the 70-80 seconds required for Applicants' coating process.

Since the process required to create an interdiffused layer of steel and aluminum alloy is substantially different than the process for coating steel with an aluminum alloy, one skilled in the art would not look to the Rallis patent for alloy compositions, temperature ranges, or bath times for which to modify the Gierek patent. The Examiner presents no evidence to the contrary, but rather simply relies upon Rallis in the abstract. The Examiner provides no rational underpinning as to why a person skilled in the art would modify Gierek in view of Rallis. The Examiner provides no rational underpinning, as required by *KSR*, for such a modification. Rallis discloses a very narrow and specific process for interdiffusing

steel and aluminum alloy which is not applicable to Applicants' invention or Gierek's disclosure. Therefore, Rallis cannot be relied upon for an obviousness rejection.

II. CONCLUSION

The Examiner has not made out a *prima facie* case of obviousness. The Examiner relies upon prior art from three different technologies: aluminum coating (Gierek), aluminum interdiffusion layering (Rallis), and aluminum casting (Japanese '213). Each of these technologies and processes has different goals and objectives, with the resulting products being used for different purposes. There is no evidence that one skilled in the art would look to these different technologies and combine them in some fashion, and then have to do additional testing or experimentation to optimize the process to meet the limitations of claim 7. The Examiner provides no rational basis for combining the references, and picks and chooses selected portions from the references, without relying upon the teaching of each reference as a whole. Such unsupported assertions and conclusions cannot support a rejection for obviousness.

For all of these reasons, the § 103 obviousness rejection of claim 7 is fatally flawed and should be reversed.

No fees or extensions of time are believed to be due in connection with this brief; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Respectfully submitted,

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